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Indian Standard

METHOD FOR DETERMINATION OF MEAN FIBRE LENGTH OF WOOL

(*First Revision*)

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Indian Standard
METHOD FOR DETERMINATION OF MEAN FIBRE LENGTH OF WOOL
(First Revision)

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Indian Standard
METHOD FOR DETERMINATION OF MEAN FIBRE LENGTH OF WOOL
(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 17 May 1971, after the draft finalized by the Physical Methods of Test Sectional Committee had been approved by the Textile Division Council.

0.2 Fibre length is one of the factors on which the spinning quality of wool depends; generally speaking, longer wools are combed and spun into comparatively fine worsted yarn and short wools not suitable for combing are spun into coarse woollen yarn. Wool fibre is not straight; its crimps and curls complicate measurement of length.

0.3 Taking into consideration the views of producer, consumers and testing authorities, the Sectional Committee responsible for the preparation of this standard felt that it should be related to the testing practices followed in the country in this field. Furthermore, due weightage had to be given to the need for international co-ordination among standards prevailing in different countries of the world.

0.4 In reporting the result of a test, in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960*.

1. SCOPE

1.1 This standard prescribes a method for determining the mean fibre length of wool.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definition shall apply.

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*Rules for rounding off numerical values (*revised*).

2.1 Staple — A bunch or tuft of fibres which naturally cling together in a fleece.

3. SAMPLING

3.1 Test sample to evaluate the mean fibre length of wool in a lot shall be selected so as to be representative of the lot.

3.2 Test sample, selected in compliance with an agreement between the buyer and the seller, shall be held to be representative of the lot.

3.3 Preparation of Test Specimen — Mix the gross sample thoroughly, spread out as evenly as possible, and mark it into zones by means of an adjustable sampling frame [*see* **6.1** (a)]. From the central portion of each zone and without disturbing the arrangements of fibres in a staple, draw a small quantity of wool, say about 5 mg, so as to yield a total of about 0·5 g. Without disturbing the arrangements of fibres in a staple, spread the wool so drawn evenly over a distance of about 8 cm along the length of a velvet board, keeping the root ends of fibres in the same direction. Cover the root ends of the fibres with a steel rule and draw a bunch of about 100 fibres from under each one of the middle three 2-cm markings of the rule. Each bunch so drawn shall constitute a test-specimen. The bunches taken together, shall constitute the test sample.

4. ATMOSPHERIC CONDITIONS FOR CONDITIONING AND TESTING

4.1 The test samples shall be conditioned to moisture equilibrium from dry side in the standard atmosphere of 65 ± 2 percent relative humidity and 27 ± 2°C temperature (*see also* IS : 196-1966*).

Note — When the test samples have been exposed to standard atmosphere for 24 hours in such a way as to expose, as far as possible, all portions of the specimens to the atmosphere they shall be deemed to have been reached moisture equilibrium.

4.2 The test shall be carried out in a standard atmosphere (*see* **4.1**).

5. REAGENT

5.1 Methyle ether or benzene.

6. APPARATUS

6.1 For the purpose of this test, the following apparatus shall be used:

a) *Sampling Frame* — consisting of an adjustable wooden or metal frame of suitable size and fitted with elastic cords along its length and width (*see* Fig. 1).

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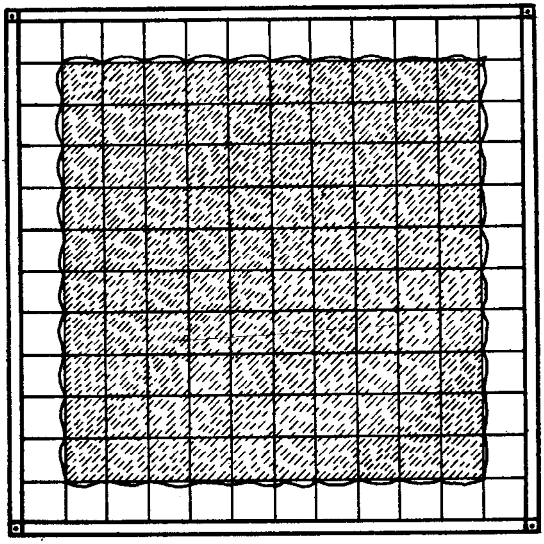
*Atmospheric conditions for testing (*revised*)

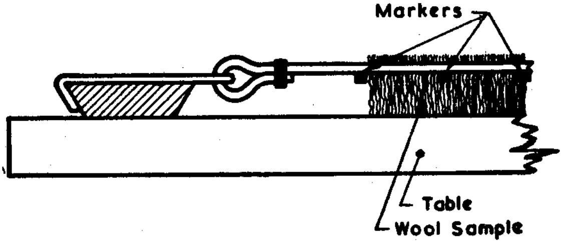
b) *Velvet Board* — of black or any other contrasting colour.

c) *Two Pairs of Forceps.*

d) *Scale* — graduated in centimetres and millimetres.



Plan of Sampling Frame Showing Edges of Wool Sample Evened upto Markers



Enlarged Section of One Angle Bar of Sampling Frame with Marker and Wool Sample in Position

FIG. 1 SAMPLING FRAME

7. PROCEDURE

7.1 Degrease a test specimen either in 2 changes of methyle ether at room temperature or 3 changes of benzene warmed at 40°C. Draw the wool fibres by hand and form them into a bunch, with the root ends of fibres lying in one direction. Tie the bunch loosely near the root ends of fibres and place it on the table. Cover the tip ends of fibres under light pressure to facilitate drawing out of fibres one by one.

7.2 Draw one fibre from the bunch and straighten it out by means of the pairs of forceps, taking care not to stretch it but merely to remove its crimp. Place it on the velvet board and measure its length from end to end by means of scale correct to one millimetre. Similarly measure the length of each fibre in the bunch.

7.3 Test at least two more test specimens in a similar manner as in **7.1** and **7.2.**

8. CALCULATION

8.1 Calculate the mean fibre length, the standard deviation, the coefficient of variation and the standard error of the mean of all the observed values.

8.1.1 If the standard error of the mean is less than 5 percent of the mean, report correct to the nearest millimetre, the mean fibre length obtained as in **8.1.**

8.1.2 If the standard error of the mean is equal to or more than 5 percent of the mean, make at least 300 further observations.

9. REPORT

9.1 The report shall include the following information:

a) Mean fibre length,
b) Standard deviation,
c) Co-efficient of variation,
d) Standard error of mean, and
e) No. of observations.

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*Sales Office in Bombay is at Novelty Chambers, Grant Road, Bombay 400007 — 89 65 28

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